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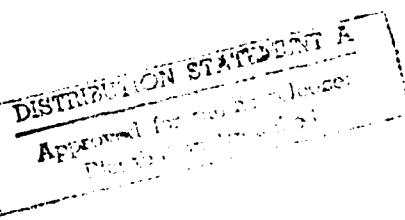
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ARE THIRD WORLD ARMIES THIRD RATE? HUMAN CAPITAL AND
ORGANIZATIONAL IMPEDIMENTS TO MILITARY EFFECTIVENESS

Anthony / Pascal

11 Jan 1986



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**The Rand Corporation
Santa Monica, California 90406**

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I. INTRODUCTION

The true effectiveness of military forces fielded by Third World countries is a subject of continuing interest. Third World states devote considerable shares of their resources to national security systems. Many face real threats from hostile neighbors. The capability of forces must, of course, be measured first against the seriousness of military contingencies, which are reflected in the degree of hostility and fighting capabilities of potential adversaries. But important determinants of the military effectiveness attained by a given state lie in the degree of development in the economic, educational, social, political, and cultural spheres. Lags in such components of the development process may adversely affect the ability to operate and support modern weapons, or *micro-competence*, and the ability to organize and manage forces for military ends, or *macro-competence*.

What has become clear is that there is a complex relationship between military inputs--numbers of weapons, the size of armies, the hours devoted to training--and military outputs--the ability to prevail on the field of battle. In Third World states the process of transforming inputs into outputs, resources into capabilities, is affected by certain societal features which act as impediments. But deliberate policies instituted by the national leadership can enhance both sorts of competence at any stage of national development.

PILOT STUDY OF MIDDLE EAST MILITARY FORCES

Some insights into the process of military modernization in less developed countries (LDCs) are available from a study recently completed by the Rand Corporation for the Office of the Secretary of Defense.* The findings reported in that study are directly applicable,

* Anthony Pascal, Michael Kennedy, Steven Rosen, *Men and Arms in the Middle East: The Human Factor in Military Modernization* (R-2460-NA), Rand, Santa Monica, June 1979.



of course, only to the countries actually studied--Saudi Arabia, Jordan, Egypt, Syria, Iraq, Iran, and Turkey. I feel, however, that these results also shed light on the attainment of indigenous military effectiveness--what impedes it, how it can be speeded--in other parts of the world. The findings appear to me especially relevant for such regions as South Asia, Africa, and Latin America.

I do, however, want to record some caveats to generalizability which arise out of the special circumstances of the Middle East in general, and the Arab-Israeli confrontation in particular.

(1) In the Middle East theatre are stocked large numbers of some of the most advanced weapons ever produced in the First and Second Worlds: F-15 and, perhaps, MIG25 fighter aircraft, advanced surface-to-air missiles, sophisticated armor with night-fighting capability, precision-guided antitank missiles, and new generation battlefield communication systems. Such hardware places very high demands on operational personnel in terms of exploitation, maintenance, and stockage of weapons, and on the leadership for training, positioning, and coordinating the forces. Outside the NATO/Warsaw Pact Theatre, inventories of similar size and quality are rarely seen.

(2) In all of the countries we studied, Islam is the dominant religion. Some of our findings with respect to educational practices, modes of leadership and cultural outlook, are no doubt peculiar to Muslim societies. To what extent these same traits might characterize, say, the Thais, Indians, Kenyans and Brazilians is a matter for further research.

(3) The Arabs have had to prepare themselves to battle a foe which, from a military standpoint, represents very high levels of development. In terms of human and organizational abilities the Israel Defense Force (IDF), according to most observers, is equivalent or even superior to any Western European or North American military. It is precisely this edge in the competence factor which has permitted the Israelis to prevail through a series of five wars against adversaries who greatly outnumber them in available troops and in weapons inventories. Few other Third World forces face as large a competence gap.

(4) We know a great deal more about the relative capabilities of the Arabs and Israelis because, unfortunately, they have undergone a series of real world tests in the wars they have fought. Not only do the wars facilitate faster adaptation, as each side learns from past mistakes, but they permit tracing of the paths of modernization over time. For local militaries outside this region, there are many fewer data points with which to validate hypotheses.

The data we utilized in the study of military modernization came from a myriad of sources. We reviewed reports from the Defense Department and the intelligence agencies, including those filed by defense attaches. We read accounts of the wars in the region written by Arab, Israeli and third party observers. We conducted a series of 25 structured interviews with employees of U.S. business firms with long contacts in the area, ranging from arms suppliers engaged in weapons transfers and technician instruction to construction and oil companies and banks. We also interviewed about 40 U.S. government officials in agencies, such as DoD, National Security Council, CIA, State Department, AID, and even the National Science Foundation and the Treasury, who had knowledge of strategy and tactics, weapons transfers, technology absorption, military training, educational and scientific trends, and social and economic developments in Middle Eastern states. Finally, we visited 13 American universities, two aviation training institutes, and several military bases to gather information on the preparation levels, skills, and attitudes of Middle Eastern students here to study subjects with actual or potential military applications.

In reading and interviewing we focused on the absorption of high technology weapon systems since we were interested in the problems that arise when sophisticated equipment is introduced into proto-technical societies. Because of their complexity, these systems place severe demands on managerial capabilities, as well as on pools of skilled workers. In studying absorption we employed a variety of indicators to measure relative success; these included the actual war outcomes, assessments of combat readiness, and judgments as to self-sufficiency and national autonomy in the utilization of weapons.

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In this paper I first sketch some relationships between societal development and military effectiveness. I then discuss obstacles to military modernization in LDCs on both the micro- and macro-competence levels. This is followed by a section containing suggestions for policies to overcome the barriers and by some concluding remarks.

II. THE RELATIONSHIP BETWEEN SOCIETAL DEVELOPMENT AND MILITARY MODERNIZATION

Industrialization and attendant urbanization move society along paths that widen the option for building military power. Not only do physical resources for military aggrandizement become more available but the entry into technological culture usually prepares the citizenry for participation in collective undertakings in which a modern outlook confers great advantages. Although it is undoubtedly true that the sense of collective purpose (notably the Israeli concern with national survival) enhances effectiveness, it is also the case that warfare has changed so dramatically that the general concomitants of urban industrial existence--the ability to work in organized teams with advanced equipment--outweigh the martially useful qualities generated in nomadic or rural societies--fierce loyalties, personal bravery.

After reviewing various arguments about the relation between broader socio-economic modernization and modernization in the military, we concluded that an effective fighting force, capable of engaging a sophisticated adversary, is most likely to emerge out of a developing society. Only then will the skills and outlooks necessary to successfully prosecute a modern war be available. We considered, but ultimately rejected, the alternative model, which posits the building of an advanced military capability in isolation from, or even as a precursor to, general development.

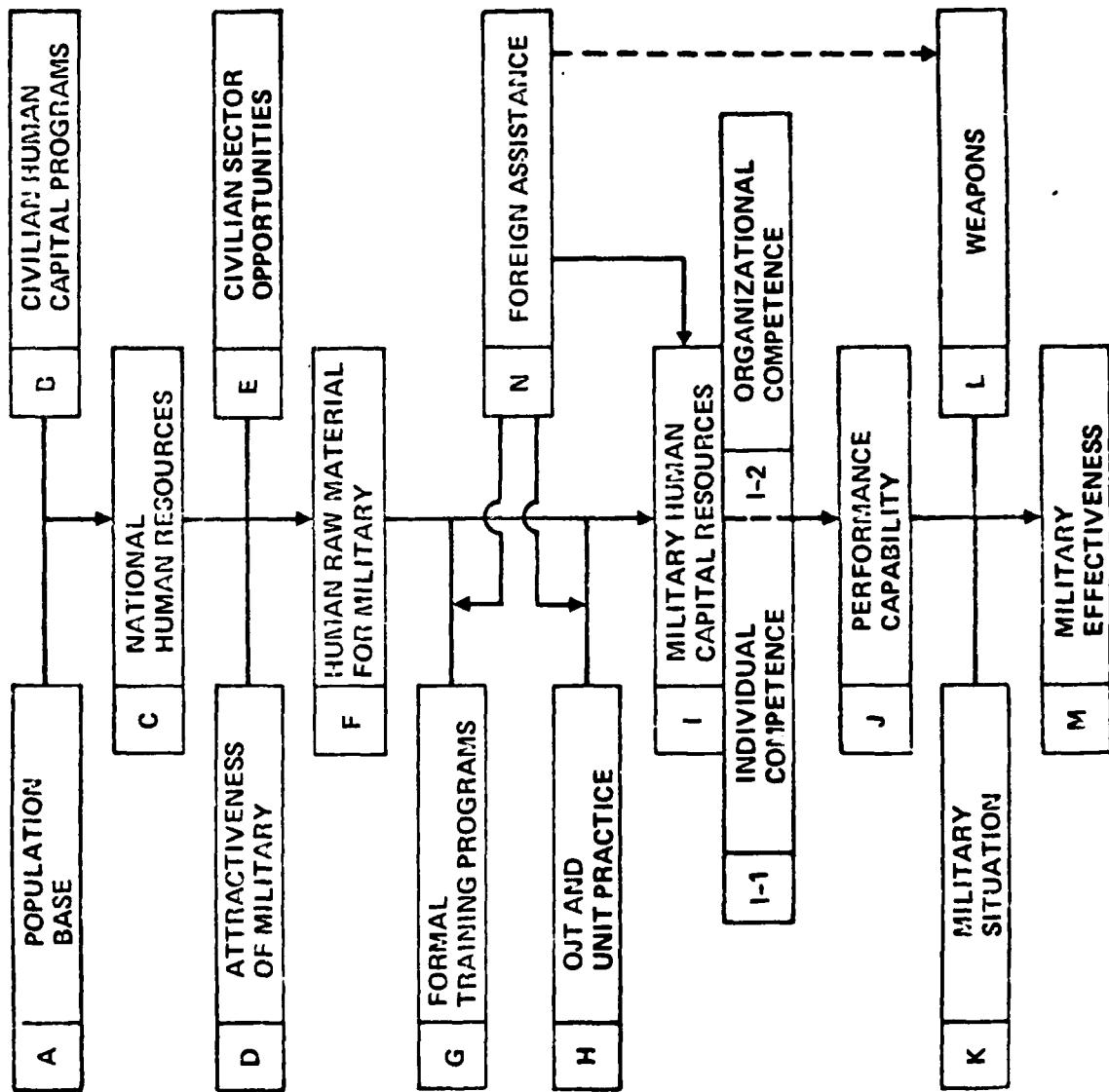
To better understand how modernization in the civil and military sectors interrelate we developed a conceptual scheme. Figure 1 presents a flow chart that depicts this approach. It is most convenient to begin at the bottom. The *military effectiveness* (M) of any military branch is determined by three factors: the *military situation* (K) facing the country, the particular *weapons* (L) it possesses, and *performance capabilities* (J) with these weapons. Capability to perform is determined by the country's *military human capital resources* (I), which are broken into the *individual skills* (I-1) and *managerial-organizational forms* (I-2) that are available. The degree of

skills and the effectiveness of organizational forms will be determined by *on-the-job training and unit practice characteristics* (H), *training programs* (G), and the *raw material* (F) available to the military sector. The role of *foreign assistance* (N) looms large here, in assisting training and exercise programs, as well as directly augmenting operational domestic personnel. The human raw material, or man-power quality (F), available to the military depends on three factors: the *attractiveness of the military* (including powers to conscript) (D), *alternative opportunities in the civilian sector* (E), and the *national human resource base* (C). The last is more fundamentally shaped by *civilian human capital programs* (B) and the characteristics of the *underlying population base* (A).

THE ROLE OF HUMAN COMPETENCE IN MILITARY EFFECTIVENESS

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FIGURE 1



Revised

III. BARRIERS TO MILITARY MODERNIZATION

In LDCs, barriers to modernization are both extensive and serious. They yield at different rates as development unfolds. Obstacles to the attainment of military effectiveness may lie in the inadequacy of the population base, deficiencies in civilian human capital programs, a civilian economy which competes for talent, social objectives which override strategic considerations in the use of the military, political tests for military jobs, instability of the regime which leads to distrust of independent power centers, and certain attitudes and mindsets which arise out of the traditional culture.

DEMOGRAPHIC

Population size confers obvious advantages. The determinants of the size of the required military force are largely exogenous and stem from the strategic situation facing the country. Other things equal, populous countries can more easily find the trainable manpower required in their military forces, assuming a fairly equal distribution of native abilities in each country. Egypt thus can assemble without undue difficulty a sizeable standing army out of its population of 40 million. Iran and Turkey, also populous states, find it even easier. Syria, Iraq, and particularly Saudi Arabia encounter more problems in recruiting adequate numbers of requisite quality. Jordan does comparatively well mostly because its force level aspirations are modest.

LDCs are prone to exclude some potential pools of skilled labor and management talent. Most commentators agree that aside from the "loyalty test," barriers to advancement based on ethnic or social class discrimination have receded somewhat in Arab societies as democratic and pluralistic ideas gain acceptance. Perhaps the clearest and most costly--in efficiency terms--of the remaining barriers affect women, particularly in the most traditional societies such as Saudi Arabia. Even with the severe labor shortages in the Kingdom, women hardly participate in the civilian economy, let alone in the military forces.

Jordan, Iran, and Egypt have much more readily accepted women in clerical and technical positions, even in the military, although a strong reaction by traditional elements is already apparent.

There are inefficiencies inherent in the maintenance of ethnic, sex, and class barriers to participation. The military forces of the states studied vary substantially in their openness to pluralism because the political price necessary to gain the advantages of wider access differs among them. The Iraqis distrust the Kurds, Jordanians restrict the Palestinians, Syrians discriminate against Shiites, each operating out of motives of regime security and political patronage. Integration of women violates deep-seated values in Muslim society of which the Saudi rulers seem most observant. Even in neighboring Iran, the Shah's attempt to break with traditional sexual segregation evoked strong reactions. The disinclination to use civilians for military tasks in most of the states stands in the way of one obvious remedy for skill scarcity which is widely applied in some Western militaries.

EDUCATIONAL

Human capital building programs--basic and university education, technical and vocational training, as well as medical and nutritional improvements--obviously enhance the quality of the population base from which the military recruits its force. Some Israeli commentators perceived significant improvement in health and literacy among Egyptian prisoners captured in 1973 as compared to 1967.

The education system however is still incompletely secularized at the preuniversity level and reinforces certain habits and perspectives. Rote memorization continues to dominate learning; problem-solving through generalization, trial-and-error techniques, and reasoning by analogy are exceptions to the rule. Religion, language, and culture (rather than mathematics, science, and social studies) remain the emphasis in primary schools and, in many states, even in secondary schools.

American university professors note that degrees and diplomas attained often fail to measure the capability of students. A mania for paper credentials in countries like Egypt may have produced an educational system in which quality of instruction is sacrificed to the goal of producing large numbers of graduates.

ECONOMIC

Rates of economic growth do differ appreciably across the countries studied. Economic development brings attendant changes in skills and outlook valuable to the military. But growth also has its costs from the perspective of the army or air force recruiter. States with expanding economies find it increasingly difficult to attract and retain needed talents in the military sector against the enticement of high wages and opportunities for advancement in civilian life. Iran and Saudi Arabia are examples. But even in the slow-growth and no-growth economies, competition for personnel enters through the lure of emigration. Hundreds of thousands of young Egyptians, Jordanians, and Syrians, for example, work in the Gulf states and Libya where oil exports fuel a continuing boom.

SOCIAL

In less developed countries the military may serve a social purpose. Turkey has for decades used its army to instill basic literacy and to socialize young men from the countryside. Egypt has traditionally guaranteed government jobs to all college graduates so as to hold down unemployment in the middle class; many end up in the army. The result in the first case is an excessive number of recruits and in the second a superfluity of officers. These policies reduce the military training resources available to the individual soldier and make the forces unwieldy. In many countries the army also performs civic action functions--road and dam construction, public health or education duties --which also detract from time available for preparation to perform military missions.

POLITICAL

Political instability of governing regimes inhibits sharing of authority. Power independently exercised may be regarded as an invigorating influence in many nations, but in many others it is threatening to existing leaders. Middle Eastern countries being among the latter, the leadership tends to hoard power. Aristocratic vestiges may have waned, but political loyalty often replaces birth as a criterion for assignment

and promotion. The ascriptive system is thus replaced by one based on fidelity rather than merit. A leader appoints the most faithful candidate who frequently has ties to the same family, town, or sect as the governing group.

Where loyalty to the existing government is an issue, the leadership will naturally stress faithfulness rather than competence in making assignment and promotion decisions. The Jordanians regularly favor Bedouins over Palestinians, the most educated and progressive component of the population, in sensitive military appointments. Evidence of the loyalty criterion is also seen in the dominance of Alawites in key Syrian command positions and a favoring of leaders originating in the town of Tikrit in the Iraqi forces. As an example of the consequences, many observers allege a sharply negative relation between rank and capability in the Syrian officer corps, although they perceive no such pattern among the Egyptians.

Stable regimes can wield military power more effectively, not because they necessarily have superior supplies of human capital but because they can afford to organize people more efficiently. They are secure enough to attempt to delegate responsibility to its most appropriate level, having less fear that independent nuclei of power will threaten the existing structure. Delegation appears to be a prerequisite to the establishment of flexible and adaptive command structures.

Over and over we were struck by the critical contribution of decentralized decisionmaking to the successful prosecution of war in the region. The 1973 War, on both the Sinai and Golan fronts, illustrated how hypercentralized military commands on the Arab side found it difficult to respond to unanticipated opportunities and threats: The Syrians ignored a possible opportunity to advance beyond the Golan Heights and into the Galilee Valley in the first few days of the campaign; the Egyptian canal crossing achieved such surprise as to make possible the occupation of the Mitla Pass and Abu Rudeis oil field, but the opportunity was not pursued; it took inordinate time for the Egyptian high command to react to the Israeli counterattack on the west bank of the Suez. Anecdotal evidence as to the superiority of Egyptian field commanders relative to the Syrians led us to surmise that a portion of

the edge in organizational adaptability displayed by the Egyptian military (compared with the Syrian) may be attributable to the regime stability factor.

Some have argued that the fear of insurrection directly affects training practices as well. Without live ammunition and combined force operations, the realism of exercises is much reduced and the preparation of the forces thereby diminished. But fearful leaderships seem reluctant to disperse the resources and to permit the lateral cooperation necessary to organize these sorts of exercises. The superior internal security situation in Egypt, compared, say, with that in Syria and Iraq, should in days to come begin to translate into better training and then greater potential battlefield responsiveness.

CULTURAL

Although the Middle East states under study vary substantially in the degree of modernization they have already attained, certain cultural attributes have important implications for current and future military competence. Any attempt at policy manipulation must contend with these longstanding attitudinal predispositions. Religion, education, social organization, the state of economic development, and history combine to produce a set of attitudes that inhibit the emergence of technical sophistication in troops and modern management practices in military leadership. Rather than attempt to characterize the cultural position of each country on the basis of the Islamic-traditional versus Western-industrial, we will discuss a set of modal attributes of the Middle East outlook, identifying the traits and attitudes relevant to military competence.*

* The description of culture and attitudes presented here emerged out of myriad conversations with American civilian and military people who have had sustained familiarity with the Middle East. We noted a remarkable consistency in opinion on the vestiges of cultural barriers to modernization. Impressions of our respondents came from field experience and not from exposure to the standard academic analyses of the regional personality such as Patai's *Arab Mind* (Scribner's, New York, 1975) or Berque's *The Arabs* (Praeger, New York, 1964). Each respondent cited numerous anecdotes to support the contentions made. Still, cultural generalizations are fraught with subjectivism and,

Muslim religion stresses the unquestionable authority of scripture as revealed in the Koran, the unadulterated expression of God's word, transmitted through his prophet Mohammad. The teachings apply to political, social, and economic relations as well as to metaphysical matters. The resulting conformity, fatalism, and authoritarianism contrast with the emphasis accorded individualism and self-determination in, say, American or Australian society. In the Middle East, acceptance, obedience, and loyalty figure prominently. Although such traits are valuable in instilling discipline, they may work against the flexible and adaptive behavior required to successfully prosecute the sorts of military engagements likely in the region, especially in opposition to Israel.

Low per capita incomes and lags in economic development mean that children grow up with little exposure to the mechanical artifacts of society. The typical Middle Easterner is thus at a disadvantage in using tools and equipment when compared, say, to a Swede or Japanese. In well-to-do families where these appurtenances of industrial society may be common, the ingrained disdain for manual labor may militate against the development of mechanical aptitudes.

Lack of familiarity and aristocratic vestiges combine to produce prejudice against hands-on activities, which has negative consequences. Because clerical, mercantile, and administrative functions command higher prestige in Muslim societies, even those who have received technical training--engineers, chemists, journeymen mechanics--seek departure from the field, the lab, or the shop to become managers. The result is often a waste of much of the investment inherent in the training.

Technological inertia tends to result from underlying traditions and from common life experiences. It is reinforced by another aspect of Middle East culture. The importance of "face" and the associated use of shame as a negative sanction works against the adoption of unconventional methods. Outcomes that are unfortunate are regarded as

particularly because our informants were Westerners, may include significant traces of ethnocentrism as well.

risks worth taking in the deliberate search for novel solutions. In societies that use guilt, a demonstration of worthy motivation may excuse lack of success; in those that use shame, often associated with a favoring of ends over means, almost nothing can justify a mistake.

Most observers remark a withering away of the attitudes and outlooks that impede modernization as a result of the very process of modernization itself. As urbanization and industrialization take hold, fear of experiment, xenophobia, fatalism, social rigidity, and disdain for the manual appear more and more dysfunctional. Violations of tradition--in expression or behavior--provoke weaker social sanctions and finally become the new norm.

On net, we see in the Middle East a group of societies undergoing change. Outlooks and attitudes characteristic of the preindustrial stage linger on and continue to affect the pace of modernization but are indeed fading along with development. Change at the individual level outstrips reform at the organizational level. But the recognition of weaknesses and the experience of 30 years of intermittent warfare will inevitably speed the process of adaptation in the military forces.

IV. THE ATTAINMENT OF MILITARY EFFECTIVENESS

Policies instituted by secure and forward-looking national leaderships can begin to break down many of the barriers discussed. Here I outline some of the initiatives adopted to improve military effectiveness in the Middle East states we studied.

MICRO-COMPETENCE

Enhancing Human Capital Quality

Civilian education and health programs can improve the manpower base and make force assembly easier. However, spending on such programs comes out of the same national budget that finances direct military expenditures, and the civilian program inevitably benefits people who do not enter the military. A dedicated warrior state could conceivably concentrate its human capital improvement efforts exclusively on its soldiers, at least in the short run. All of the states we studied have adopted a more generous approach and have generally had comprehensive social programs. Those with the heaviest defense burden, such as Syria, have obviously had to make the most sacrifices on the social front.

Expanding the Base from Which the Military Force Is Assembled

All of the states have experimented with the use of outsiders for the performance of certain specialized tasks. The Saudi military employs vast numbers of foreigners from South Asia, East Asia and the West. The Iranians tapped foreign sources to meet skilled labor shortages and also developed the *homofar* system in which fairly high wages were paid to indigenous civilians with scarce skills on long-term contract to the military. The *homofar* concept offers attractive advantages to those other forces in the region in which acute civilian skill shortages do not preclude its use (e.g., Egypt, perhaps Syria and Iraq). The idea, however, seems not to have spread.

The employment of outside personnel certainly adds to immediate capability and most likely expedites the enhancement of indigenous military skills through OJT. But such dependence also carries costs aside from the obvious ones inherent in higher compensation and, in the case of expatriates, the depletion of foreign exchange reserves. Civilian workers are generally less subject to military control and discipline than are their national military counterparts. When outsiders are also expatriates who owe primary allegiance to some third power, the ability to make war on any sustained basis will be affected by the acquiescence if not approval of that third power.

Making the Military More Attractive

The military, of course, must compete with the civilian economy for the society's available talent. Given the level of effectiveness in conscription policy, the higher the prestige and the more attractive the conditions of the military calling, the easier the attainment of manpower goals. Turkey, where the warrior tradition reigns and the military career confers high prestige, meets its manpower objectives most successfully among the countries surveyed. Quotas are also more easily met as a result of the relatively high military living standards and because the education and technical training opportunities compare favorably with civilian life. Military careers have lower relative prestige in Saudi Arabia and score lower still in Iran, with obvious negative implications for recruitment in those countries.

Improving Military Assignment Practices

Generally, expertise in assignment--the matching of aptitudes and skills with positions--is quite underdeveloped in Middle Eastern militaries. Diagnosis and skill remediation receive short shrift. Political loyalties continue to weigh heavily in promotion decisions. Assignment problems emerge not only out of inexperience with the principles of personnel management but as a result, as well, of the often observed inclination to strip the best human resources from the generality of units so as to man the elite forces or the most recently acquired weapon system. (Favoring SAM and anti-tank units in 1973

seems to have led to certain advantages for the Arabs, however.) Iran seemed to have made the most progress in planning for force balance, but even there the priority unit syndrome produces adverse effects on personnel capabilities in the remaining units.

Increasing the Resources for Training

The goal of catching up with the Israelis in proficiency drives the Arab forces to train more intensively.* The improved Arab performance, particularly in anti-aircraft and anti-tank units, demonstrated in 1973, testifies to the payoff from training. A side cost often intrudes, however. The better the training in technical subjects, the harder it is to retain the resulting electronics specialist or engine mechanic in the military force, given his alternative pay in the civilian economy. This problem has been most severe in Iran and Saudi Arabia, and in Jordan where the lure is emigration, but it is felt even in Turkey. The United States and Israel are not immune to this problem either.

Training often works best when the trainee is removed from the inhibitions of his accustomed sociocultural milieu. Acceptance of individual responsibility and criticism, innovative behavior, esteem for manual endeavors, and willingness to work long hours may be more easily inculcated in settings where these traits are approved and rewarded. Middle Eastern students often return from training stints in the United States fired with new attitudes and work styles. The use of bicultural liaison officers, who are assigned responsibility for discipline and behavior, and who accompany their training contingents, had come to be seen by Iran as an effective device for reinforcing the positive effects. The Saudis have recently installed similar procedures. Peace-Start is an interesting program recently instituted for the Saudis by the U.S. Air Force. It consists of 3 years of high school education and 2 years

* Although necessary to prepare the forces for action, training is expensive in several senses: It uses resources and it degrades immediate response capabilities. The poverty of many of the countries in the region constrains training by limiting supplies of parts and expendables. Egypt and Jordan come prominently to mind.

of maintenance instruction in the United States and a year of on-the-job training back in the Kingdom. This very expensive program does seem to produce high quality specialists although the process may take twice as long as would be necessary to train an American to the same standard.

Military training methods must also break with traditional approaches utilized in elementary and secondary schools. An emphasis on cause-effect and end-means relationships will help develop a problem-solving orientation. And, rewards for ingenuity in coping with unforeseen contingencies will have to be built in to military training. In addition, if supervisors were encouraged to display a positive attitude toward manual tasks, these activities would be pursued more enthusiastically by the troops.

More stress on individual responsibility for actions should also be integrated into the training and exercise system. As of now the imperatives of serving the group and keeping face have pronounced effects on the classroom performance of military trainees. Students avoid showing ignorance by not asking questions. Instructors avoid provoking shame by not posing questions. Cheating carries little stigma and may, in fact, be seen as a way for students to help each other and to serve group goals. U.S. instructors have had to take considerable care to design programs that will accommodate cultural differences. Otherwise, there would be little give and take in the classroom and poorer students would not receive remedial training.

On the other hand, assignment of responsibility to individuals can go too far. At the extreme it may inhibit initiative. The pervasiveness of what are often called "punishment" cultures in the Middle East has negative military implications. For example, in Iran, if a civilian or military technician made an error, he could lose pay and risk incarceration or corporal punishment. This incentive system motivates some typical behavior patterns ranging from general lethargy to the falsification of reports. In tactical flying concern for the safety of the aircraft often leads to very conservative training. In maintenance, fear of losing or damaging equipment means conservative testing and practicing. The harshness of the punishment culture has

recently diminished. Some Western management techniques--discussion meetings that help identify problems without trying to cover up failures, devices to retrain technicians who err--are being adopted in the military. Debriefing of operational personnel, such as pilots, must also be pushed further. Currently, debriefing sessions are short-circuited to avoid offending sensibilities. The result, however, is a failure to learn from mistakes.

THE ATTAINMENT OF MACRO-COMPETENCE

I have divided the search for attainment of progress on the macro-competence dimension into two component requirements: locating and preparing management personnel and devising appropriate organizational forms.

Managerial Personnel

Because of class-based criteria for recruiting officers and men, the social distance between the two groups is large and it leads to attitudes of contempt and distrust on the part of the former. Reducing the social distance through more democratic force-assembly methods and through indoctrination of leaders will mean that skills developed by officers could be applied more effectively.

Compensation for officers is comparatively modest in most of the states under observation. When meager compensation is combined with high civilian demand for skilled managers and technical experts, as is the case for instance in Saudi Arabia, the result is a shortage of officers and a good deal of moonlighting, even in daylight hours.

To retain the best junior officers and to sustain their morale, opportunities for upward movement must be apparent. Systems clogged with supernumerary higher officers, who hold their position because of faithfulness to the regime or ethnic identity with leaders or merely because of long seniority, will discourage the younger who are often the more capable. Pruning of redundant colonels and generals will often have an exhilarating effect on the entire military.

Basic reforms in managerial style must precede significant progress in macro-level competence. For the Arab states that have fought

Israel, failures in responsiveness and adaptability have been noted repeatedly. Intensive training and realistic exercises can help overcome the deficiencies in the initiative shown by field commanders which have been so widely noted. Even in 1973 the Egyptian and Syrian forces displayed rigid adherence to prespecified plans and lack of trust in the perspicacity of officers at the front. Armored attacks, for example, were organized in textbook fashion with little attention to terrain or to enemy responses which the fighting units reported. Lateral coordination in the field was weak. Although some attempts at reform are underway, progress in this area is difficult and timeconsuming.

Producing command skills thus requires that exercises be carried out with a large element of realism. Use of live ammunition, arrangements for joint operations--for example, air-armor-infantry--and the incorporation of uncertainty and fluidity to the mock battle situation best prepares commanders for the test of war. But certain background factors in the Middle East militate against such devices. Ammunition, as pointed out, is expensive. Inter-unit horizontal links are undeveloped as a consequence both of tradition and regime insecurity. The preparation of a flexible response capability goes against ingrained Arab preference. The yield currently derived from force exercises is thus diminished even *when* they occur. But without realistic practice, skills acquired in training may atrophy to the point where the system simply loses its effectiveness.

Organizational Forms

Fear of failure, authoritarian attitudes, and political instability all contribute to organizational systems in which vast numbers of decisions are routinely bucked up to scant numbers of top leaders. As a result, decisionmakers lack the information required to identify and select what, by Western standards, would be the logically sensible options; and so many decisions are imposed on so few decisionmakers that responses are delayed. To economize energy and expedite action, elaborate but brittle plans define "solutions" to problems. These plans are functional only so long as the external world behaves according

to a fixed script. Against a resourceful adversary or even a recalcitrant nature, strict adherence to the blueprint may lead to failure and defeat.

Individual skills and attitudes alter more rapidly than do a culture's characteristic organizational forms. A society will begin to produce individuals who can solve technical problems, for example, before it evolves the organizations necessary to accommodate and reward such talents. The evolution of the organizations requires the purposeful coalescing of like-minded people, socially a much more difficult task than providing education or even inculcating new attitudes. Thus, the appearance of administrative structures that automatically and impersonally define problems, lay out alternative solutions, test options for feasibility, schedule the pursuit of the adopted strategy, and reward participants on the basis of results may substantially lag the availability of competencies in the populace.

The attempt to duplicate organizational forms that appear successful in admired foreign contexts may at times actually constitute an impediment to true managerial effectiveness. The Arab penchant for elaborate and intricately prespecified plans of action may lead to sacrifice of flexibility and spontaneity. The key, it appears, lies in sufficient confidence by the leadership in both the loyalty and capability of subordinates that the appropriate delegation of power may take place. Given this trust at the top, military staff officers and field commanders will grow accustomed to making the responsible but imaginative decisions required in fluid situations.

Supply systems provide ample illustration of organizations where traditional patterns of authority have constrained efficient performance. The reluctance to release accumulated hoards, the insistence on face-to-face transactions, the fascination with forms and stamps, and the disposition to seek higher level approval for trivial decisions means, for example, that a parts inventory may remain in excess in one location while equipment is grounded for want of the same item at a nearby base. In Iran progress in logistics rationalization had been occurring but it was not noted that malperformance was widespread in Saudi Arabia.

Cultural constraints to the sharing of power are reflected throughout the processes of technology absorption. For example, the Iranians had planned to purchase the most sophisticated military communications technology in the world, but were installing only the vertical connections upward to the Shah, and not the horizontal field linkages. The Arabs--except for the Jordanians--have had even more noticeable difficulties in adopting modern technology, again partly for political and cultural reasons: the reluctance to share resources, the concern to protect oneself from responsibility for failures, the lack of faith by superiors in the competence of subordinates.

The effect of the technological revolution is to heighten the advantage of an officer corps that can adapt, improvise, and manage efficiently. One important factor is the coming molecularization of the battlefield. Because effective firepower is becoming increasingly light and compact, mobile and fairly independent small units will in the future often be used to threaten and destroy larger units. There will evolve a premium for mobility concealment, and dispersal. The quality of junior officers and the intermediate ranks from captain to colonel will then more heavily influence the effectiveness of the fighting forces. Improvisational tactics and operational flexibility will find their widest scope, and the net effect of the new technologies will enhance rather than reduce the importance of the qualitative factor.

V. CONCLUSIONS

'High quality human capital and appropriate organizational structures constitute critical inputs to the production of an effective military force. In many Third World states economic, social, political and cultural features generate barriers to the development of the necessary micro- and macro-competence. The study of Middle Eastern militaries illuminates the importance of these barriers. Findings are applicable in greater or lesser degree outside the region.

The higher the national military aspiration, the greater the number and complexity of weapons in national inventories and, the more capable the potential opponents, the more will such competencies determine outcomes on the battlefield. Economic growth will elicit many of the requisite changes in human and material resource levels, and in outlook and attitude. But explicit policies can also enhance the pace of military modernization.